

REMARKS

Claims 1-35 are pending in the application. Claims 1-4 and 9-12 are withdrawn from consideration pursuant to a telephone restriction requirement and the response of February 17, 2005. By this Amendment, new claims 26-35 have been added.

Claims 5-8 and 13-25 are rejected. Claims 5 and 6 are rejected under 35 U.S.C. § 102(b) as being anticipated by Ishimitsu (U.S. Patent No. 5,881,162). Claim 7 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishimitsu and further in view of Kanebako (U.S. Patent No. 5,680,471). Claims 8, 13-20 and 23-25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishimitsu and further in view of Nakajima (U.S. Patent No. 5,761,334; assigned to Fuji Photo Film Co., Ltd.). Claims 21-22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishimitsu and Nakajima, and further in view of Sako (U.S. Patent No. 6,671,394). Applicant adds the new claims listed in the Appendix below and submits the following arguments in traversal of the claim rejections.

As a preliminary matter, Applicant submits minor editorial changes to pages 1 and 2 of the specification as shown in the Appendix below.

Rejection of Claims 5 and 6 under § 102(b) by Ishimitsu

Applicant respectfully submits that claim 5 is patentable because each and every element of the claim is not disclosed or suggested by Ishimitsu. Claim 5 recites:

A method of detecting a prospective abnormal shadow in an image of an object at a predetermined detecting level, the method comprising:

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changing the detecting level according to photographing conditions under which the image of the object is taken.

For example, Ishimitsu fails to disclose or suggest, *inter alia*, changing the detecting level according to photographing conditions. In the Office Action, the Examiner states that column 12, lines 3-10 and the table in column 12 corresponds to the changing the detecting level, as claimed.

Ishimitsu discloses an image reading apparatus for reducing moire artifacts caused by aliasing. The apparatus includes a primary scanner for scanning an original x-ray image obtained using a grid recorded on a recording medium with light in a primary scanning direction. An image is scanned, electric signals are generated from the image scanning, and the electric signals are converted into digital signals. The digital signals are filtered and the filtered digital signals are then thinned. During the filtering, a cut-off frequency is set so that moire artifacts caused by the beat phenomenon is prevented. Col. 11, lines 22-24. Even though the reference discloses setting the cut-off frequency according to pixel size (col. 12, lines 37-41), there is nothing which discloses or suggests that the grid has any relationship to any kind of detection. Rather, the grid relates to the cut-off frequency which effects the presence of the beat phenomenon.

Claim 6, which depends from claim 5, is patentable for at least the reasons submitted for claim 5.

Rejection of Claim 7 under § 103(a) over Ishimitsu and further in view of Kanebako

Claim 7, which depends from claim 5, is patentable because Kanebako fails to make up for the deficiencies of Ishimitsu.

In addition, claim 7 is patentable because a *prima facie* case of obviousness has not been established. In the Office Action, the Examiner argues that Ishimitsu does not disclose a method wherein the detecting level is changed part by part of the image, but that Kanebako teaches such a feature. Applicant respectfully submits that one skilled in the art would not modify the teachings of Ishimitsu with the teachings of Kanebako to render claim 7 obvious.

Kanebako relates to an image processor which acquires an image including a desired portion of an object to be examined. An outline is extracted from an area of interest from the desired portion of the object by dividing the stored image into plural areas using parallel lines, and a threshold value is set for each of the plural divided areas. In effect, Kanebako teaches the division of an image on a *spatial basis*.

Further, the Examiner argues that the usage of the grid corresponds to the claimed photographing condition. As discussed above, the grid is disclosed in Ishimitsu in the context of setting a cut-off frequency to filter the image. The filtered image, however, is expressed in the *frequency domain*, not on a spatial basis. Therefore, one skilled in the art would not be led to modify the filtering of a image expressed in the frequency domain by a reference which discloses spatially dividing an image.

Rejection of Claims 8, 13-20 and 23-25 under § 103(a) over Ishimitsu and further in view of Nakajima

Claim 8, which depends from claim 5, is patentable for at least the reasons submitted for claim 5 and because Nakajima fails to make up for the deficiencies of Ishimitsu.

Moreover, assuming *arguendo*, that one skilled in the art would combine the teachings of Ishimitsu and Nakajima, there is still nothing to suggest that such a combination would detect a prospective abnormal shadow in a mammogram, as recited in claim 8. As noted above, Ishimitsu discloses an apparatus for the reduction of artifacts and make absolutely no mention regarding the detection of any sort of shadows in an image.

Claim 13 is patentable because Ishimitsu and Nakajima fail to teach, suggest or provide motivation for all elements of the claim. Claim 13 recites:

A system for carrying out the method of detecting a prospective abnormal shadow in a radiation image, said system comprising:

a prospective abnormal shadow detecting means for detecting a prospective abnormal shadow at a predetermined detecting level,

a photographing condition input means for inputting photographing conditions under which the image of the object is taken, and

a *detecting level changing means* for changing the detecting level according to the photographing conditions input through the photographing condition input means,

wherein the prospective abnormal shadow detecting means detects a prospective abnormal shadow according to the detecting level changed by the detecting level changing means.

In the Office Action, the Examiner argues that the grid density corresponds to the photographing condition. But as argued above, there is nothing to suggest that the grid density is used for detecting a prospective abnormal shadow in a radiation system. Rather, the grid density relates to an entirely different goal of reducing moire artifacts in the image.

Moreover, the Examiner concedes that Ishimitsu does not disclose detecting a prospective abnormal shadow according to a detecting level but cites Nakajima as disclosing such a feature. Although Nakajima discloses thresholds used in a detection of shadows, there is nothing to suggest that one skilled in the art would use the grid density to change the threshold.

In other words, there is nothing to suggest that one skilled in the art would incorporate the grid density of Ishimitsu used for cleaning up images with a threshold value T_h of Nakajima used for detection of shadows.

Even assuming *arguendo*, that the references can be combined, there would be no reasonable expectation of success in view of the totally unrelated nature of the grid density and the threshold value T_h .

For at least the above reasons, claim 13 is patentable.

Claims 14-16, which depend from claim 13, are patentable for at least the reasons submitted for claim 13.

Claim 17 is patentable for reasons similar to those submitted for claim 13.

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Claims 18-20 and 23-25, which ultimately depend from claim 17, are patentable for at least the reasons submitted for claim 17.

Rejection of Claims 21-22 under § 103(a) over Ishimitsu, Nakajima and further in view of Sako

Claims 21-22, which ultimately depend from claim 17, are patentable for at least the reasons submitted for claim 17.

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